MALHEUR NATIONAL WILDLIFE REFUGE
Burns, Oregon

ANNUAL NARRATIVE REPORT
Calendar Year 1976

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR

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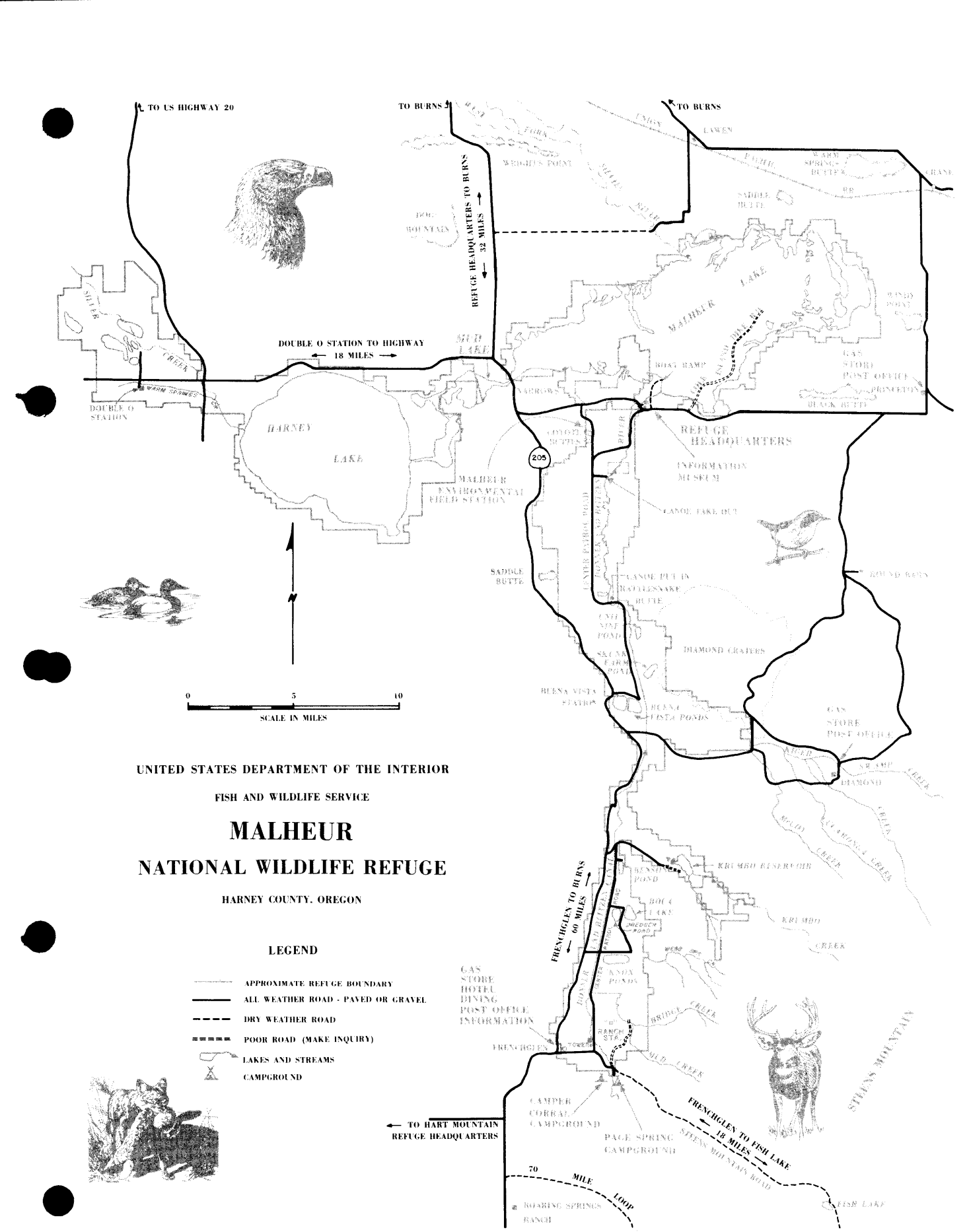


UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

MALHEUR

NATIONAL WILDLIFE REFUGE

HARNEY COUNTY, OREGON

LEGEND

- APPROXIMATE REFUGE BOUNDARY
- ALL WEATHER ROAD - PAVED OR GRAVEL
- DRY WEATHER ROAD
- POOR ROAD (MAKE INQUIRY)
- LAKES AND STREAMS
- CAMPGROUND

I. GENERAL

A. Introduction

The 181,000 acre Malheur National Wildlife Refuge is located in the Malheur and Harney Lakes Basin, 32 miles south of Burns, Oregon. The basin has no outlet to the sea and, for this reason, is also known as the Oregon Closed Basin. It encompasses over three million acres and has three major water sources. The Silvies River with headwaters in the Blue Mountains, drains about 1,350 square miles and flows into Malheur Lake from the north. The Donner und Blitzen River heads on Steens Mountain in the southeastern portion of the basin. It drains a 1,000 square mile watershed and flows into Malheur Lake through the Blitzen Valley from the south. Silver Creek flows directly into Harney Lake through the Upper and Lower Warm Springs Valleys from the north and drains a 900 square mile area. Harney Lake also receives water from Malheur Lake during high water years.

Both Malheur and Harney Lakes are within the boundaries of the refuge. Malheur Lake, the largest freshwater marsh in the western United States, is historically a very important nesting, resting, and feeding area for birds... especially waterfowl, grebes, and wading birds. Harney Lake is the lowest point in the basin, which results in it being a natural sump.

Irrigated and naturally flooded meadows east and south of Burns in the northern part of the basin are some of the most important resting areas for waterfowl, lessor sandhill cranes, and shorebirds on the Pacific Flyway during the spring migration.

B. Climatic and Habitat Conditions

The 1976 year could be characterized as a comparatively high water year, as was 1975. Total runoff in the three major watersheds was near normal, with 89,750 acre feet recorded for the water year on the Blitzen (45 year mean annual flow - 86,940 acre feet); 114,300 acre feet on the Silvies (62 year mean annual flow - 120,300 acre feet); and 26,750 acre feet on Silver Creek (24 year mean flow - 30,720 acre feet). However, the differences in weather between the two years resulted in a significant variation in the chronology of flooding and waterfowl use during the 1976 spring migration.

The winter and spring of 1975/76 had above average temperatures, and very mild weather. This was in sharp contrast to the previous winter, which had cold weather, above average snowfalls and a very late spring (nesting delayed about two weeks). Flooding on the Silvies River Flood Plain began in early December, 1975, when

the warmest temperature ever recorded in Burns for the month of December (61°F) brought a rapid, though short-lived snow melt. The early runoff brought Malheur Lake to a peak of about 45,000 surface acres by March 15, or 15 weeks earlier than the peak reached on June 30 in 1975.

While the magnitude of the spring migration was essentially the same in both years, the difference in the chronology of flooding resulted in a marked difference in the distribution and duration of flood water. Spring waterfowl use varied accordingly. In 1976 waterfowl arrived and departed two to three weeks earlier than in 1975, and were generally more concentrated. With the earlier peak in lake levels, the extensive stands of alkali bulrush east of Pelican Island (Unit 6) which were dry in 1975, were flooded, attracting thousands of snow geese. Increased goose use on Harney Lake (Unit 2) was also attributed to excellent stands of alkali bulrush at the west inlet to the lake.

Hopes for a bumper grain production year in the Basin were dashed with the onset of a killing frost on June 26. Temperatures ranging from about 18 to 22°F. The lack of early summer rains contributed to a growing pessimism concerning the Basin's grain production. However, a record-breaking four-plus inches of rainfall in August came in the nick of time, and 9,000 acres of the total 15,000 acres of grain planted in the Basin were subsequently harvested. The balance was harvested in the form of hay, pastured, or, in the case of the refuge, fed up by the birds.

The new and improved grain fields in the Buena Vista area of the refuge generally fared somewhat better than the grain elsewhere in the Basin, and accounted for most of the 82 percent increase in goose use that occurred in the Blitzen Valley.

The mid-summer rainfall, coupled with the excellent runoff received in most areas of the refuge, resulted in the most favorable brooding conditions experienced in several years. This was particularly true in the Blitzen Valley, where brood water persisted well into the fall. This contributed significantly to the excellent 1976 waterfowl production.

Late summer and fall habitat conditions were quite good, with the exception of Malheur Lake, which remained unproductive due to a combination of the prolonged high water cycle and high carp population levels. The marsh contained about 35,000 surface acres of water at the end of the year.

Basin watersheds at the end of the reporting period were ten percent of normal, with the outlook for adequate runoff in 1977 very poor. The prospect for favorable waterfowl habitat conditions

in the Basin is not good for the coming year. One consolation is the possibility that Malheur Lake marsh may be destined for a much needed dry cycle.

C. Land Acquisition

Informal meetings with the owner of the Malheur Lake marsh inholding for the purpose of working out a mutually acceptable exchange proposal were unsuccessful. The owner subsequently moved a dragline in and began "reclaiming" the tract in November. A complaint was lodged with the Corps of Engineers on the basis that the owner did not have a dredge and fill permit under Section 404 of the Federal Water Pollution Control Act Amendments of 1972. A cease and desist order was issued on December 1, and the work stopped. The owner had not made application for a permit at this writing.

There was also no progress made on acquisition of the Lower Blitzen Valley inholding (known as the Lloyd Hill Tract), nor on the two tracts on the northeast side of Harney Lake. Acquisition of the latter two tracts is essential if the chronic trespass grazing and intrusions by ATV's into the Harney Lake Research Natural Area (and sand dune formations) is to be prevented.

D. System Status

1. Objectives

The refuge land use planning process initiated in 1975 continued throughout the year, as time permitted. The resource inventory phase was completed by early summer. The habitat capability assessment phase was well along by the end of the year, and should be completed by the end of February, 1977. Plans are to complete the refuge objective setting phase by the end of May, 1977. The latter step will actually involve a review and refinement of the original refuge objective setting process completed nearly five years ago and, when completed, will provide a basis for the preparation of updated management plans. These are scheduled for completion in 1978.

The last nonprogram oriented public use activity on the refuge was phased out with the razing of the Frenchglen bathhouse. This natural warm springs bathing facility dated back almost to the turn of the century, and its removal was not well accepted in all cases. However, growing administrative problems and State public health requirements made its closure mandatory.

Work continues on the land use plan, to be completed by 1978.

A major de-emphasis of the Interpretation and Recreation program occurred, with the elimination of the refuge public use specialist position. The change was made primarily to permit greater emphasis in the Migratory Bird program, particularly in the area of habitat management evaluation.

2. Funding

A summary of FY 1972 through 1976 funding and manpower levels (excluding the FY 1976 T Quarter) follows:

FY	Base O&M 1210(MB)	1500(I&R)	6810	Total	Rehab (1210)	Permanent Positions
		1240				
1972	212,600*		19,500	232,100		15
1973	227,600*		19,500	247,100		14
1974	227,700	28,400	19,500	275,600	13,500	14
1975	250,000	21,800	40,000	311,800	43,400	12
1976	239,200	50,700	40,000	329,900	53,000	11
1977	365,900	73,200	64,400	503,500		12

*Included I&R

Funding total includes cyclic maintenance - $60,000 (1210), $3500 (1240)

II. CONSTRUCTION AND MAINTENANCE

A. Construction

Approximately 1000 feet of the east bank of the Blitzen River was rebuilt and riprapped in the lower Krumbo area. This should prevent the river bank from constantly eroding, and improve access to Rock Quarry Field. Next spring willows will be planted in the silt collected in the riprap.

The west bank of the Blitzen River from the middle of West Swamp Field to Bailey Pond was rebuilt. Over two miles of the bank was widened by adding fill dirt supplied by digging a drainage ditch west of the river. This major rehabilitation project will provide improved water control in the West Swamp and Bailey fields. These two fields have wild flooded the past three years and are nearly covered with emergent vegetation.

A new parking lot and entrance road were constructed in conjunction with conversion of the former manager's residence to the new combination administrative office visitor contact station at headquarters. The parking lot is located west of the new office and all traffic is now routed away from the residential and maintenance area. This change greatly reduced the public and employee safety hazards present under the old system.

The new office remodeling consisted of installing electric heat, carpeting and paneling. A wood entrance deck was constructed on the north side of the building. The garage located behind the new office was remodeled at the same time and converted to a combination library, conference and projection room. A new trail system was partially completed by YCC to reroute foot traffic through the headquarters area.

A pipe was installed to allow flooding of the formerly restored gravel pit near the "P" Ranch. A check and water control structure were installed in the east side of Big Juniper Field to provide a pond for pairs, broods and other wildlife.

The surplus 1965 Lorain dragline obtained last year was finally repaired and put into operation. A backlog of ditch cleaning and dike repair has developed over the past few years. Work has been concentrated on emergency repair areas.

A 1966 Galion surplus grader was obtained from the Forest Service to replace our 1952 Adams grader.

B. Maintenance

The water management system continued to be improved to provide better irrigation of grain fields, faster delivery of breeding pair water and better control of flows to reduce vast emergent stands. Several pipes and structures were moved or replaced to make the system more efficient. Minor ditch cleaning was done in problem areas.

Quarters #2 was carpeted and the interior was completely painted. The exterior of the apartments and quarters #14 were painted by YCC. All the trees around the office and museum were trimmed by a contractor, primarily for safety reasons.

C. Wildfire

None

III. HABITAT MANAGEMENT

A. Croplands

The refuge farming program continues to grow and improve after reaching an all time low in the early 1970s. All farming was done by permittees in 1976. Off-refuge crop acreages are increasing rapidly also. New farmers are moving to the Harney Basin to take advantage of comparatively cheap land and higher grain prices. The recent success of the refuge program can be attributed to a combination of things which include: experienced farmers, improved irrigation systems, weed control, grain varieties better adapted to Harney County and the greater emphasis placed on grain production to help achieve refuge objectives.

Expected yields were reduced by the lack of early summer rains and the June frost. An average yield of one-half ton per acre was produced. Canada geese, sandhill cranes and blackbirds made heavy use of fields before harvest. East Grain Camp received the greatest goose and crane use after harvest was completed.

1976 Grain Fields

Field	Acres	Crop	Tons/acre
Upper Grain Camp	50	Barley	1.00
East Grain Camp	340	Wheat and Barley	1.00
Lava Bed	200	Barley	0.20
Suicide	80	Barley	0.50
Buena Vista	137	Barley	1.00
Double O	100	Wheat	0.20
Mud Lake	73	Barley	0.30
West Swamp	30	Barley	0.30
West Center (Diamond)	210	Barley	0.75

B. Grasslands

The comparatively small amount of true grassland on Malheur occurs on the margins of the refuge or interspersed with the predominant native wet meadow wetland type. Thus, in most cases it is managed in conjunction with the wetlands, discussed in the next section.

The crested wheatgrass seeding developed several years ago just south of Boca Lake continued to be used as a means of getting livestock off the Dredger Field meadows earlier in the spring. For the past three years, it has been grazed during March 1 through 15 (March 1 through 30 in 1976). This has permitted late spring/early summer regrowth, and annual grazing use. The seeding continues to get a surprising amount of Canada goose browsing use, primarily in the spring, but also during the fall months.

The Krumbo Reservoir seeding was not grazed for the third consecutive year. The formerly heavily grazed areas along Krumbo Creek have made an excellent recovery. With development of the new Upper Krumbo Pond, this field will remain in deferment at least until the new dike and nesting islands are vegetated.

C. Wetlands

Changes in the traditional annual livestock grazing and haying program continued. During the 1975/76 forage production year, use totaled 88,000 AUMs of grazing and 3,300 tons of hay harvested and hauled off the refuge. This represented a 30 percent reduction in previous grazing use levels experienced in comparable peak forage production years (125,000 to 126,000 AUMs).

The duck production response to the changes in land use practices is discussed later under Section VI.A. Field Investigations. However, not reported there is the response of nesting greater sandhill cranes during the 1976 nesting season. Comparing crane hatching success rates under the three basic types of land use practices used, 22 nests in traditional rake-bunch hay/winter graze fields had 54.6 percent success; 11 nests in haying only fields (hay hauled off refuge, no grazing) had 63.6 percent success; and 19 nests in nonuse fields (no haying or grazing) had 84.2 percent success. All nests in the sample were in the Upper Blitzen Valley.

Sale of the Allied Land and Livestock Company ranch, the largest refuge permittee (with a maximum permit for 25,000 AUMs at one time, although it had been reduced to below 10,000 AUMs by 1976), made a number of significant changes in the grazing and haying program in the Blitzen Valley possible just prior to the 1976 haying season. Allied's privileges were retired, and their former use area used to facilitate changes in other existing permittee's

programs. The full impact of those changes will not be evident until the end of the 1976/77 grazing season.

Filling of all ponds began as soon as the first runoff was received in February with plans to have them at operating level by March 1. The early runoff was also used in the Blitzen River to flood meadows for waterfowl breeding pair habitat as well as for spring migrants. This flooding began early in February on the basis that flooding habitat before the peak of waterfowl migration would hold more birds for nesting.

Spring flood of breeding pair habitat near Sodhouse Ranch.

Meadows were maintained wet into July, with channels holding water for duck brood movement and brood rearing. August rains kept the meadows damp during the late summer.

Ponds were held at operating level until late August. Those with insignificant brood use or little feeding potential for migrant waterfowl were drained at that time. Most were drained by November 1st after waterfowl departed. Several ponds were maintained over winter to accommodate the remaining birds until freezeup. The purpose of draining ponds was to remove the carp, firm up the bottom to reduce turbidity and enhance pondweed production.

Two fields were burned to remove dense stands of emergent aquatics. Shallow flooded areas on the back side of West Swamp Pond produced approximately 250 acres of dense burweed with some hardstem bulrush. This monotype had little wildlife value. In February it was burned to remove vegetation. Plans were to plant it to grain for several years, and eventually return it to meadow grasses. Unfortunately, because of a broken dike, the river flooded most of the area preventing all but 50 acres from being farmed.

A control burn in West Swamp Field in April started a peat fire which flared up several times in the fall. Total area burned was less than one acre. Heavy equipment was finally used to control the fire.

Approximately 180 acres of bulrush and cattail were burned around Skunk Farm pond. The vegetation on the back side of the pond had become too dense for much wildlife value. Burning opened up some of the stands and on slightly higher sites some grasses began to grow which provided nesting cover. The nearby flooded ground attracted birds after burning.

Two new ponds were created in the fall. A dike in the main ditch from Krumbo Reservoir created Upper Krumbo Pond, approximately 40 acres in size. It will serve as a duck brood pond for South Krumbo, Upper Krumbo, and Krumbo Reservoir fields. A brood pond of approximately 10 acres in size was formed on the west side of Big Juniper Field by putting a pipe structure and check in a ditch.

Bailey Pond was improved by pushing up a dike along the upper edge of the main pond. The purpose was to provide better water control on 70 acres of shallowly flooded areas. This portion of the unit grew only dense burweed. The dike will allow the 35 acres of water to be held slightly deeper in Bailey Pond and hold water off the former meadow to discourage burweed growth and allow meadow grasses to return for nesting cover. Several nesting islands were also created in the pond.

The solid earth plug annually installed by refuge neighbor Larry Dunn in the Mud Lake channel to Harney Lake was replaced with a drop log structure by the refuge so that water could be released to Harney Lake when Dunn used up his water right for the year. This usually occurs in late July. A more constant water supply to Harney Lake may increase shorebird use in that area.

D. Forestlands

Not applicable

E. Other Habitat

Conditions were good this year for sweet clover. In areas of nonuse, particularly the eastern shoreline of Boca Lake and shorelines of Bridge Creek Pond, both yellow and white sweet clover grew up to six feet high. Vegetation was dense and provided good bird and deer cover.

Management of the fragile sand dunes on the north side of Harney Lake involves nonuse, as they are within the fenced boundary of the Harney Lake National Research Natural Area. No grazing is permitted, although occassional trespass grazing occurs. Vehicle use is prohibited, but tracks reveal some trespass use. Public use by foot is permitted and is not intensive enough to do damage.

Riprap was hauled from the Rock Crusher Point pit and cinders were hauled on the headquarters parking lot from the nearby pit.

F. Wilderness and Special Areas

There was no action on Malheur's wilderness proposal during the period. It awaits Congressional action.

Nominations for the National Register of Historic Places were prepared on the P-Ranch, Sod House Ranch and Double O historic sites, and, with the exception of the P-Ranch, subsequently approved by the State. All will be submitted for registration, once State review of the P-Ranch proposal is completed. A report on the history, restoration and interpretation of the P-Ranch were completed.

G. Easements for Waterfowl Management

Nothing to Report

IV. WILDLIFE RESOURCES

A. Endangered and/or Threatened Species

1. Endangered

American Peregrine Falcons. No peregrines were seen during Calander Year 1976, although it is known that they occasionally use Malheur Lake.

2. Peripheral

Ferruginous Hawk. These hawks were occasionally seen during the winter months in the Blitzen Valley. No nesting was reported.

3. Status Undetermined

a. White-faced Ibis. Ibis nests increased from the usual 20 to 80 in 1974. This year there were 25 nests on Malheur Lake. Ibis remained on the refuge into November because of the mild fall. Visitors were able to view them easier this year as many remained around Wright Pond.

b. Western Snowy Plover. This summer a study of snowy plover nesting was conducted by a class from the Malheur Field Station. Harney Lake's use by plovers is a nesting area and was verified with a minimum number of 15 breeding pairs and nests censused. A peak of 120 birds was seen there. Several birds were also observed at Stinking Lake.

c. Prairie Falcon. These falcons are occasionally seen throughout the year. Their status in recent years appears to have remained static. Some breeding probably occurs on the Steens Mountain or in rimrocks surrounding the refuge.

d. Osprey. Ospreys regularly appear in April and September. They were seen at the Double O and Sodhouse Spring during these periods.

e. Western Burrowing Owl. Little is known about this bird on the refuge. It seems to prefer the poorer, sandy and alkaline sites where vegetation is sparse. They have been seen on the sand dunes at Stinking Lake, alkaline greasewood flats on the Double O and saltgrass - greasewood areas on the north side of Malheur Lake. Their population status is unknown.

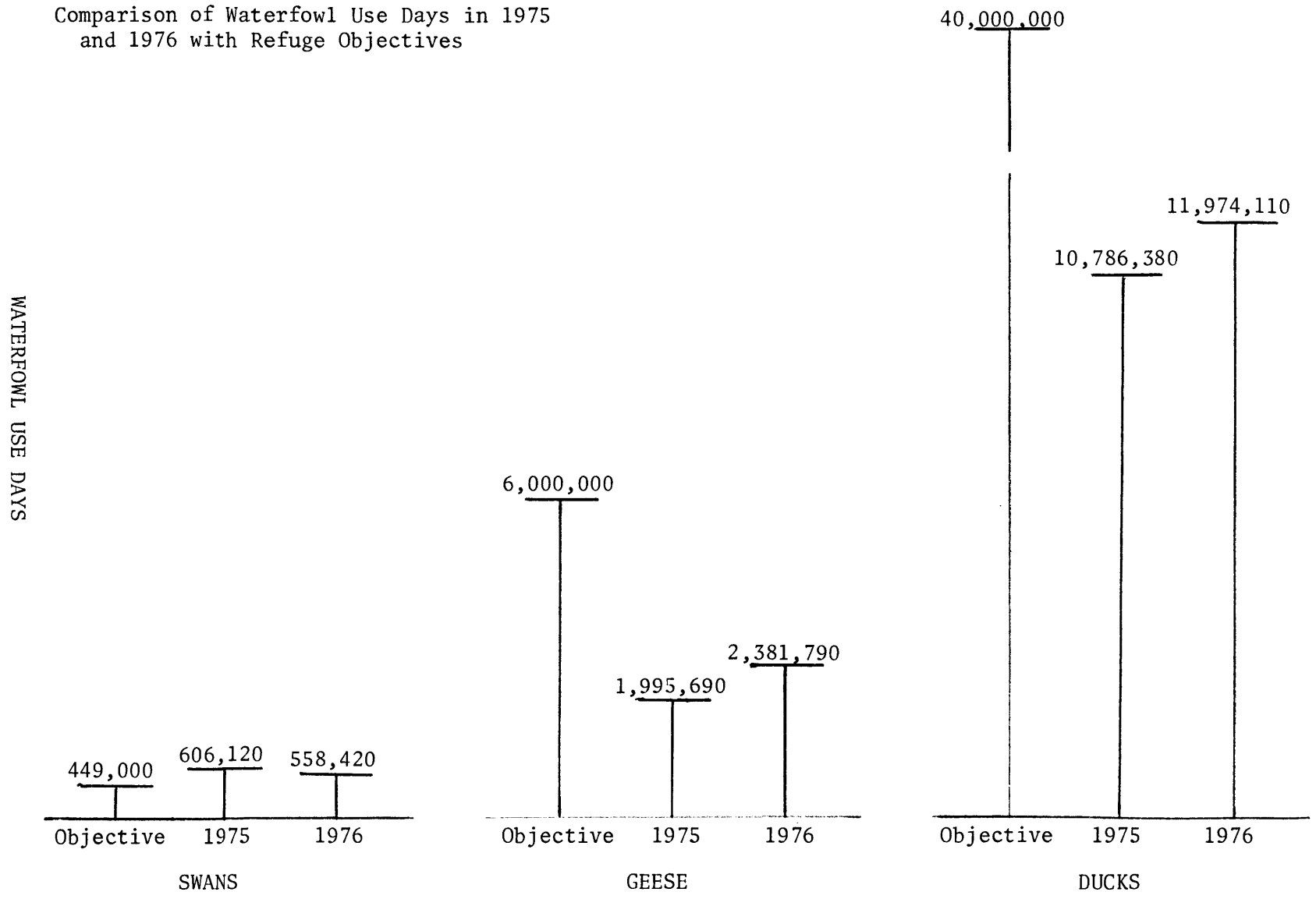
B. Migratory Birds

Population surveys for most migratory birds were coordinated with Ecological Services personnel in Burns. The refuge is an integral part of their Harney Basin study area. They recorded population data, usually in conjunction with the refuge biologist, when the refuge was censused. This procedure gave continuity to censusing the entire area. The refuge biologist was responsible for computing wildlife production on the refuge.

1. Waterfowl

Maintenance use by geese and ducks was 60-70 percent below objective level, but 11 to 19 percent higher than in 1975. Swan use exceeded objective levels by 24 percent (see graph on the following page). Generally, waterfowl use during migration remained at low levels because of the poor condition of Malheur Lake.

Comparison of Waterfowl Use Days in 1975 and 1976 with Refuge Objectives



East Knox Pond Field has received good fall duck and goose use for the past two years. Surface water was held out, but high water levels in adjacent ponds and canals keeps the soil moist and it grows excellent stands of smartweed. The field was flooded in both 1975 and 1976 with several inches of water early in September.

a. Swans. Whistling swan use was specific to areas having the best sago pondweed growth. These areas were Swan Lake (Unit 4), Malheur Lake (Unit 6), Buena Vista Pond (Unit 8) and Boca Lake (Unit 11).

Trumpeter swans remained in the Blitzen Valley until freezeup, when they moved to springs at the Double O and Sodhouse. Their numbers tend to fluctuate from lows of 17 at mid-winter to 22 by the breeding season. This indicates that some movement out of the area occurs in the winter. The locations of these movements is unknown.

The entire refuge wintering population of trumpeters previously came to Sodhouse Spring when grain was abundantly fed daily to captive waterfowl for display purposes. Display birds are no longer maintained in the pond, so regular feeding has ceased. Limited feeding occurred over the winter of 1975-1976 and no feeding is being done during the 1976-1977 winter. Results of these programs, along with questionnaires from other refuges that winter trumpeter swans, will be analyzed to determine what the future role of winter feeding for trumpeters on Malheur will be.

Eleven pairs of trumpeters were scattered over the refuge in early May. No nesting was recorded on Malheur Lake this year. For the first time a pair nested on Warbler Pond at the Double O. Three broods were hatched: one each on Warbler Pond (1 cygnet), Unit 9 Pond (7 cygnets) and Cottonwood Pond (4 cygnets). The brood of seven was the largest ever hatched at Malheur. Brood survival was not good. The single cygnet on Warbler Pond disappeared during mid-summer. The brood of seven gradually dwindled to four. Total production to flight stage was eight cygnets. See graph on page 15.

b. Geese. Snow goose use is largest during spring migration and peaked at 52,166 this year. The fall peak was 6,000. Ross geese mix with the snows and are difficult to observe on the refuge. White geese concentrate on three areas; Derrick Lake-Warbler Pond area in Double O, an alkali bulrush area at the mouth of Silver Creek on Harney Lake and the area around Pelican Island on Malheur Lake.

White-fronted geese use the refuge in small numbers during migration. They were observed on Malheur Lake and in the vicinity of Buena Vista Pond. Lesser Canadas were present in March,April, and November, with larger numbers in the fall. They were seen on Malheur Lake and in the Blitzen Valley. Cackling geese are occasionally seen with other Canadas during migration.

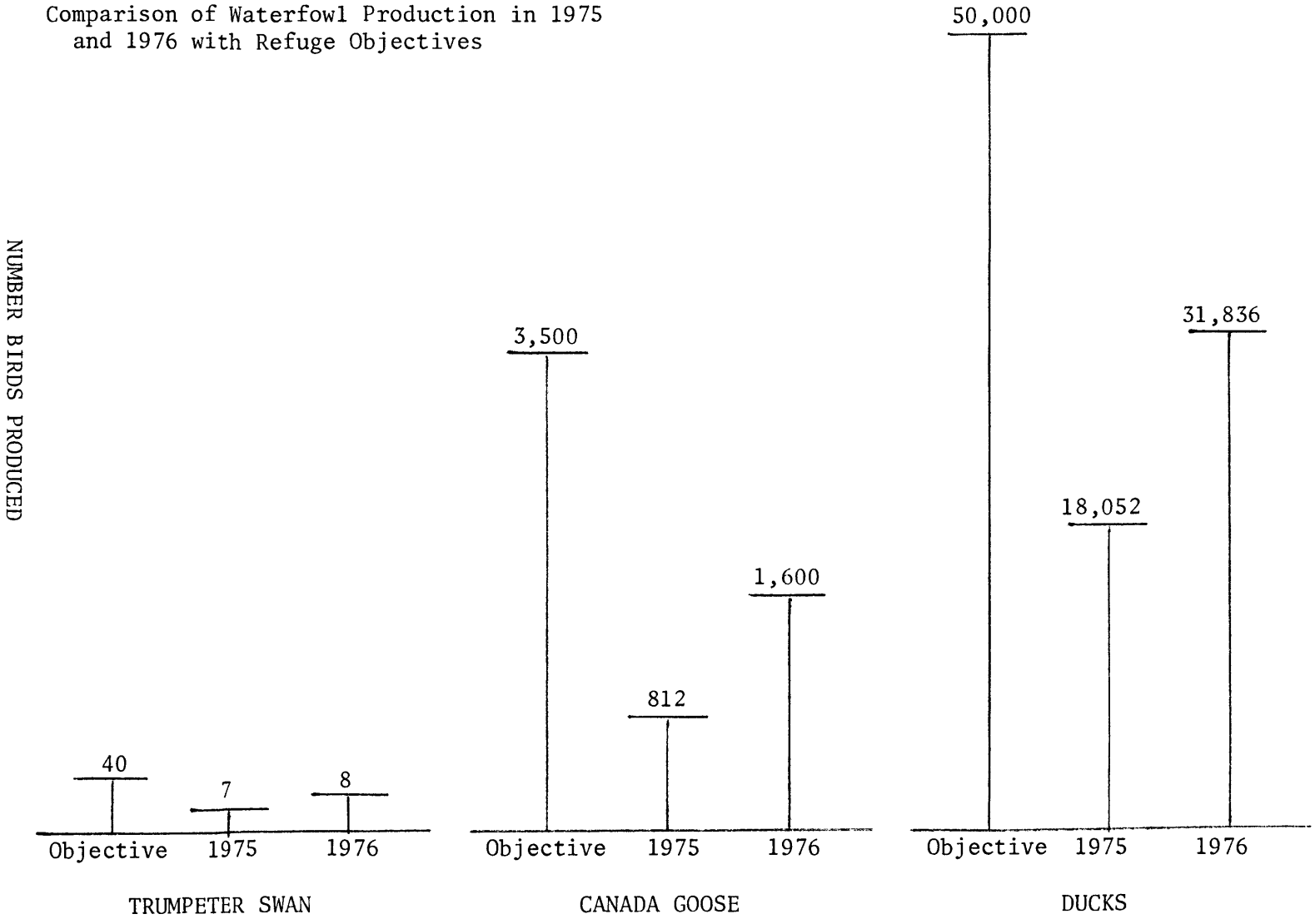
Canada goose production nearly doubled that of 1975. The breeding population increased 9.1 percent and nesting success was 54.5 percent compared to only 32.0 percent last year. Increased nesting success appeared to have largely resulted from lower predation. Highest goose use occurred on impoundments with abundant bulrush stands and island developments. These areas included Tule Pond, Hughet-Willard field channels, Malheur Lake, Skunk Farm Pond, Benson Pond, Cottonwood and Knox Swamp ponds. See graph on page 15 for goose production.

Geese respond rapidly to artificial islands at Malheur, and they can be an excellent tool for increasing the breeding population. Unfortunately, nesting success on such islands is very low (6.3 percent on islands in Tule and Willard-Hughett areas, and 30.4 percent on Benson and Cottonwood ponds). Losses are primarily from raven predation. It appears that regular predator control would be necessary if much island construction were undertaken. However, if the number of islands were so extensive that ravens could not easily search most of them, goose nest success may increase and overall production would be greater.

Cottonwood Pond was drained in the fall of 1975 and channels were opened in the dense bulrush with a dozer. Bulrush mixed with dirt was piled into islands which were similar to large muskrat houses. Response by geese was excellent. Use was heaviest on mounds of bulrush six feet in diameter or smaller and only several inches above the water. Indications were that nest success was somewhat higher, possibly because these sites were not attractive perches for ravens and they did not locate as many goose nests in this more naturally appearing situation.

In June, geese were drive-trapped on West Knox Pond. This is a major brooding area. With the help of the YCC crews, 317 local and flightless adult geese were

Comparison of Waterfowl Production in 1975 and 1976 with Refuge Objectives



banded. The purpose of this program is to monitor the local population. Some of the geese migrate, but many are resident, so hunting mortality is a factor to be considered. This mortality could be reflected in changes of the breeding population, but habitat influences may overshadow it. The best monitoring system is analysis of annual banding of 200-300 local geese.

The YCC'ers assisted with the annual goose drive.

c. Ducks. The Double O, Malheur Lake and Upper Blitzen Valley from Witzel Lane to Knox Pond were the most important areas for migrant ducks. Meadows that were flooded by February or early March at Double O and Unit 1 received high use by ducks. Fall flooded meadows which were mowed also received good use. Pond weeds grown in Buena Vista, Krumbo Swamp ponds, and Boca Lake provided excellent food. Fall flooded smartweed in East Knox Pond Field received high use.

Malheur Lake had the highest duck migrational use on the refuge. Most of this occurred east of Cole Island Dike (Unit 6) and on the potholes of the west side (Unit 4) because these areas produced some sago pondweed. Most of these areas are dry late in fall.

Limited use was recorded in the deeper portion of the lake (Unit 5). Dense milfoil and bladderwart grew in isolated beds which were heavily used by gadwall. While Malheur Lake supports the bulk of migrant ducks, use is still far below past levels. The lake produced little food and the birds moved on rapidly.

Duck production was encouraging this year. The 12,921 breeding pairs were up 28.5 percent above 1975. Dabblers predominated, comprising 73 percent of the breeding population. Water management was aimed at flooding breeding pair habitat prior to the peak of migration to encourage more pairs to stay.

Nesting success increased over last year. Success rates applied to breeding pairs was based on results of a nesting study, in cooperation with Oregon State University, conducted in the Upper Blitzen Valley. The weakness of this technique is that results from one section of the refuge are applied to the entire refuge. Additional data should be collected from other areas such as the Double O, Lower Blitzen Valley and Malheur Lake. The study emphasis also has been on upland nesting ducks so data for diving ducks is very limited. Time and manpower available has not been sufficient to gather additional data.

Total duck production amounted to 31,800 which was 76 percent higher than in 1975. This resulted from excellent water conditions for breeding habitat and available brood habitat well into August. Spring weather conditions were mild. Nesting cover is being managed to increase residual cover for early nesting ducks. Nesting success was higher because of lower predation. This was probably the result of better nesting habitat and high populations of buffer species such as mice and rabbits. Table 1 on the following page summarizes production.

The Double O, and Units 7 and 12 in the Blitzen Valley produced the most dabbling ducks. Malheur Lake was the most important for divers. However, the productivity of the lake is presently far below former levels. It could be increased by reducing carp numbers and aerating the bottom.

Table 1

Waterfowl Production - 1976 - Malheur Refuge

	Estimated No. Pairs	Nest Success [1]	Estimated No. Broods	Average Brood Size [2]	Estimated Production
Trumpeter Swan	11	18%	2	4.0	8
Canada Goose	790	51%	399	4.0	1600
Mallard	2105	53%	1116	5.9	6584
Gadwall	1649	32%	528	6.2	3274
Pintail	423	45%	190	6.1	1159
Green-winged Teal	124	45%	56	6.1	342
Cinnamon/Blue-winged Teal	4373	35%	1531	6.4	9798
American Wigeon	342	45%	154	7.0	1078
Northern Shoveler	388	45%	175	6.0	1050
Wood Duck	11	45%	5	6.0	30
Dabbler - Subtotal	9415	40%	3755	6.2	23315
Redhead	1782	45%	802	6.4	5133
Canvasback	125	45%	56	4.6	258
Lesser Scaup	40	45%	18	5.5	99
Ring-necked Duck	--	--	--	--	--
Ruddy Duck	1545	45%	695	4.3	2989
Common Merganser	14	45%	6	7.0	42
Diver - Subtotal	3506	45%	1577	5.4	8521
TOTAL DUCKS	12921	41%	5332	6.0	31836
American Coot	3914	40% [3]	1566	5.5 [3]	8613

1/ Based on data from Edford's Study in Blitzen Valley on Duck Production. 45% is average for all ducks combined due to lack on data on individual species.

2/ Average Brood Size from Table of Data for Malheur in Inventory Plan

3/ Assumed Nest Success and Brood Size

d. American Coots. Coot use varied in the Harney Basin. Spring use was 18 percent higher than in 1975 while fall use was 21 percent lower. The refuge supported 58 percent of the spring use and 85 percent of the fall use. Malheur Lake had the highest use, but use was limited there by the sparse food supply. Production amounted to 8,600 which was 14 percent higher than last year.

2. Marsh and Water Birds

Ecological Services' data shows that 1.5 million marsh and water bird use days occurred in the Harney Basin during the spring migration with the refuge supporting 56 percent of the total. No large buildup of birds occurred in the fall. Fall use was more of a continuation of the summer's population level, with gradual movement of birds through the Basin.

Most of the birds in this group nest in colonies in Malheur Lake. Cormorant, great blue heron and ibis nesting declined, while the numbers of black-crowned night heron and egret nests increased.

Nesting of greater sandhill cranes was investigated by C. D. Littlefield. An estimated 236 pairs nested on the refuge, with 52 nests located. Overall nesting success was 67.3 percent, the highest since Littlefield's studies began in 1966. Nesting success was highest in Unit 12 (80.0 percent) where the most land was deferred from livestock grazing. Unit 8, with less deferred acreage, had 55.6 percent success. Unit 11, with even less deferred acreage, had 44.4 percent success.

Predation was highest on early nests, apparently because of reduced food sources for predators at this time. Raccoons and ravens were the principal nest predators. Only 15.4 percent of the young cranes that hatched survived to flight stage. Total production was estimated to be 47.

Cranes have responded well to the grain field development in the Buena Vista area. They roost on Buena Vista Pond and feed in the surrounding grain fields. With the mild fall, crane use extended into early November. Cranes peaked at 1,637 on October 6, which was down from last year's peak of 2,279 on October 26.

3. Shorebirds, Gulls, Terns and Allied Species

Stinking Lake continues to be a principal shorebird area, particularly for migrating phalaropes and avocets. Unit 6 of Malheur Lake also provides excellent shorebird habitat late in summer. Use has increased in the Blitzen Valley in fall with more ponds being lowered or drained.

The Double O still supports most of the avocet and stilt nesting, as well as much of the long-billed curlew nesting. Wilson's phalaropes and snipe are found over most of the meadows in the spring.

No California or ring-billed gulls nested on the refuge this year. Two hundred pairs of Franklin gulls nested on Malheur Lake. No nesting by this species occurred last year.

On Malheur Lake, few black terns were seen and no nests located. The Forster tern population also seemed below the previous years population and few nests were found.

4. Raptors

Bald eagles peaked during the spring waterfowl migrations when ten adults and one immature were seen from February 15 - 21. Use for the entire Harney Basin peaked at 75 in mid-March. Most of them were off the refuge near waterfowl concentrations.

There are 16 golden eagle nest sites on and adjacent to the refuge. Nine nests were checked, and five of them were successful, producing eight eaglets.

During the year, four injured golden eagles were brought to the refuge. One was subsequently released to the wild, one died and one was permanently flightless and given to David Siddon at Grants Pass, Oregon. Mr. Siddon has a federal permit to keep eagles and uses these birds in educational talks at schools. He is also attempting to develop a captive eagle breeding program. The fourth bird was cared for by a local veterinarian, Dr. Leon Pielstick. After setting a fractured wing and further complications, the eagle was killed by a predator in the refuge pen.

Raptor use was heaviest on meadows not grazed or hayed where rodent populations were apparently high.

Unusual sightings included a red-shouldered hawk at the P Ranch on August 14-15 and a flammulated owl at headquarters on May 9. Both species were reported by C. D. Littlefield.

5. Other Migratory Birds

The usual migration of songbirds attracted many visitors. Favorite places to observe them included the headquarters area, Benson Boat Landing and the expanding willow thickets in Unit 12.

Ravens are abundant on the refuge and are discussed in a study in Section VI. The study revealed surprising migrational distances for birds fledged on the refuge. One marked bird was seen at Prairie City, Oregon, approximately 55 miles north of the refuge, and another near Montello, Nevada, approximately 280 miles southeast of the refuge.

Unusual sightings for the year included:

Calliope hummingbird - May 8-22 at headquarters
Parula warbler - May 29-June 2 in willows north of Benson Pond
Hermit warbler - May 15 at headquarters
Bay-breasted warbler - June 6 at headquarters
Northern waterthrush - May 23 at Benson Boat Landing
American redstart - May 23 at Benson Boat Landing
Summer tanager - May 19 at P-Ranch
Rose-breasted grosbeak - May 30-31 at P-Ranch
Gray-headed junco - May 23 at Benson Boat Landing

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals and Furbearers

Pronghorns are seen fairly regularly at three locations on the refuge. About ten head are found around Mud Lake; a herd of ten to thirty are often seen on the grain field at the Double O; and a group of 10 to 15 animals frequent the meadows in the west portion of the Rockford Lane Field.

Trend counts to monitor the mule deer population are conducted each September. This provides data related to the archery deer season in the Blitzen Valley. The total estimated refuge population was 690 deer, which is 15 percent below last year. Part of the reason may be the better habitat off the refuge when deer were attracted to the fall green-up of grasses resulting from August rains on the Steens Mountain. This appeared to be the case in the Blitzen Valley, where deer numbers declined. However, at the Double O, deer were more abundant with 33 counted on that transect compared to only 10 last year.

The deer sex and age ratios were 55 bucks, 100 does, 44 fawns, compared to 17 bucks, 100 does, and 33 fawns last year. A factor involved may be the hunting regulations limiting legal

bucks to four-points or larger in the Steens Mountain Unit. Also, coyote control was conducted by the Oregon Department of Fish and Wildlife on Steens Mountain in the winter to reduce deer predation.

Beavers have increased in the Blitzen Valley. Beavers have spread in the lower Blitzen Valley and cause problems in the irrigation system throughout the valley. (From November 1976 to January 8, 1977 a total of 26 beavers were taken). About 25-30 beavers can be removed each year without affecting observability of this species by the public.

An aerial muskrat house count was made February 10, 1976. The population on Malheur Lake was estimated to be 4,000 - similar to the past two years. The last trapping program was in 1973.

Muskrats appeared to increase during the summer, based on observations in the lake. No trapping was recommended as muskrats were still considered beneficial for opening dense stands of bulrush.

2. Other Mammals

In recent years trapping and limited shooting has been permitted on the refuge to harvest coyotes, with no apparent affect on the population. During 1975-76 a trapper removed 47 coyotes from the refuge. At our request, Animal Damage Control personnel also shot about 40 coyotes that were killing permittee's livestock on the refuge. During that winter, Oregon Department of Fish and Wildlife initiated a coyote control program on the Steens Mountain for deer management. Aerial shooting occurred regularly through the winter.

The summer population appeared to be smaller, with few coyotes seen. More were seen during the fall months, but it was felt the population was still smaller than the previous year. No coyote trapping was permitted on the refuge this fall and no livestock depredation complaints were received by the end of the year. The Fish and Wildlife Department plans to conduct regular control on the Steens Mountain from November through March.

Raccoon sightings were more numerous, which may be an indication that they are increasing. They are a significant nest predator, particularly on geese and sandhill cranes. Skunks have not been seen in recent years, but the scent of one was detected in Knox Field this summer.

Most rodents increased this year. Jackrabbits were especially abundant during the summer, as evidenced by numerous road kills.

Porcupines were commonly seen, particularly in the upper Blitzen Valley.

3. Resident Birds

Annual pheasant crow counts are made as a basis for formulating recommendations on the refuge pheasant hunt. Transects in the Double O and Lower Blitzen Valley showed the population to be similar to 1975 levels. However, pheasants increased 65 percent in the Upper Blitzen Valley. This is the area having a nine day hunting season. The additional land being deferred from haying and grazing use and new grain fields seems to be benefitting pheasants by providing more cover and food.

No surveys of other upland game birds are being conducted. Generally, the mild winter of 1975-76 permitted a good carry-over of birds. Combined with a good production year, this resulted in abundant fall populations. Quail were common in most brushy areas, particularly around headquarters, and along rimrocks in the Upper Blitzen Valley and the south side of Double O. Chukars were abundant in rimrocks around the refuge. In early December a flock of 30 birds appeared on the hill above headquarters. The nearest known chukar populations are about ten miles away. By January, 1977 their numbers had declined to about twelve. Sage grouse are seen in limited areas on the refuge. Most observations are limited to 5-15 birds around the Double O grain field-Peterson Field area, and in the Oliver Springs area.

4. Other Animal Life

Malheur Lake is in a poor state of productivity, at least in part from the high carp population. However, gill net sets revealed that the carp population may not be as large as anticipated. Nine carp was the highest number taken in a 100 foot set. Aging from scales of over 100 samples found most carp to be 3-4 years old.

The most surprising fact uncovered by gill netting was the abundance of other fish. In one 100 foot net, 24 yellow perch were taken. Many were 11-12 inches in length and the largest was 13 inches long, weighing over a pound. Several white crappie were also taken, with the largest recorded at 13 inches and weighing one pound four ounces.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

The new office location in the former manager's residence has changed the major flow of visitor use. New signing and trails allow the visitor to become easily oriented and more self-sufficient. The trail route was planned to provide a loop starting at the parking lot and then going to the office and museum and returning to the parking lot.

Use of the Stinking Lake Research Natural Area continues to be in great demand, especially by classes from the Malheur Field Station. Access is by permit only. The majority of use has been for educational purposes.

2. Off-Refuge

The refuge staff wrote 18 news releases and made 50 public appearances during the year. Most of our off-refuge information programs involved public education on the land use problems and refuge objectives of Malheur. The refuge grazing controversy was a hot item and many editors wrote articles on the subject.

B. Recreation

1. Wildlife Oriented

a. General Waterfowl Hunting. Interest in waterfowl hunting at Malheur has declined sharply due to the lower number of birds using the lake. Only 593 visitors hunted on the area, which is 38 percent less than last year. Total hunting success for the season was similar to last year: 1.7 birds compared to 1.8 birds per hunter last year. During opening weekend, success was much lower (1.4 birds) than last year (3.0 birds). This tended to discourage many hunters from returning, leaving only the few regular hunters who consistently get birds by working hard for them. Some paddle canoes three miles or more into favorite hunting areas. These people held the average up over the season until freeze-up in early December.

This year the gadwall was again the predominate species in the bag, followed by American wigeon, mallard and pintail and lesser numbers of other species.

The method of surveying hunters was changed this year. Last year personnel worked weekends to observe hunters and obtain hunting data. It became evident on opening weekend this year that hunter use would be too low to justify regular weekend duty. Questionnaire boxes were installed at the three principle entrances to obtain continued data on use and success. Hunter cooperation was excellent.

No major problems were encountered with this program, although some hunters still strongly feel camping at the west and east entrances should be permitted. Since camping was stopped on the public hunting area, this use has moved across the refuge boundary onto private land. So far, landowners have not objected. A major access to Malheur Lake is still through private land belonging to Bob Cargill. He resists granting right-of-way through his land, but allows everyone access after asking permission.

b. Upland Game Bird Hunting. Upland game hunting is permitted on the Malheur Lake area but populations are so low that little hunting occurs there.

The special hunt in the Upper Blitzen Valley continues with interest primarily from local residents. It consisted of a nine day season (November 13-21) during the final period of the regular State season on pheasants. Use has remained about the same for three years with 64 hunters visiting the area this year. Ring-neck pheasants are the primary bird, but the hunt is also open to California quail and chukars. Success is low, averaging only 0.8 birds per hunter, but those with good dogs can usually pick up one or two roosters.

No problems were encountered with this hunt, but questionnaire boxes to survey hunters met with failure. Too few people bothered to respond so that estimating use and success was difficult.

c. Archery Deer Hunt. The twelve day archery hunt for mule deer was held September 8-19. It is purposely opened after Labor Day and on a Wednesday to reduce the number of hunters on opening day. This hopefully provides a higher quality hunt.

A total of 163 hunters participated, which was 20 percent lower than last year. Only 2.5 percent were successful. Four deer, the same number as last year, were bagged. Six were crippled. This hunt provides high quality recreation with no significant affect on the deer population. The average hunter saw 16 deer during his hunt and shot 4.5 arrows.

Other visitor use declines after Labor Day so there are few conflicts caused by hunters. Some hunters would like the season to open on a weekend so more people would be present to move the deer around, while others report the satisfaction of being able to stalk deer with less human interference.

d. Trapping. The refuge trapping program has been primarily management oriented rather than an attempt to provide recreation. In 1975-76 two coyote trapping permits were issued because it was felt that a harvestable surplus of animals were available. The trapper's interest was economic rather than recreational. During the year there was more interest in coyote trapping on the refuge, primarily from outside the local community. Because of the growing sensitivity of commercial trapping programs, and the lack of clear-cut Service policy on trapping generally, the refuge staff decided to discontinue this program in 1976-77. Currently, the only coyote removal authorized is for livestock depredation control. A thorough analysis of the role predator control should play in the refuge wildlife management program was initiated at the end of the year. It is to be completed in early 1977.

e. Fishing. Fishing begins in late April and generally runs through October. Rainbow trout planted in the Blitzen River near Page Springs provided fishing in the east and west canals and the upper portion of the Blitzen River. Bridge Creek also receives light pressure. East canal has the heaviest use.

Krumbo Reservoir is being converted to a warm water fishery. Annual stocking of rainbow trout provides no control over the increasing roach population. Hagerman National Fish Hatchery planted 20,000 nine inch rainbows. This will be the last trout stocking. In 1974 several hundred largemouth bass were planted from Moon Reservoir. They spawned in 1975 and 1976.

A limited number of bass about six inches long were caught in Krumbo, and occasional fish up to 2-3 pounds were reported. Last spring the Oregon Department of Fish and Wildlife planted about 600 spawning-age white crappie. Hopefully, these two species will afford fishing recreation and exert some control on the roach, without the put-and-take approach that has characterized the trout fishing in this reservoir.

2. Non-Wildlife Oriented

With the removal of the Frenchglen bathhouse during the year we no longer have any non-wildlife oriented outputs.

C. Enforcement

Vandalism and violations are not a major problem for the amount of public use experienced. Road closures have greatly reduced the areas where visitors can go and has made enforcement easier. We are attempting to maintain control of our growing visitor use by good planning such as in the recreational section of our new land use plan.

Since hunting pressure was very light on Malheur Lake, enforcement effort was minimal. Two new signs were installed near the Narrows informing hunters that the Mud Lake proclamation lands were closed to public hunting. Indications are that very few people hunted these lands. We did, however, receive a couple of phone calls from traditional hunters of the Mud Lake area challenging our authority.

The Oregon State Police made ten cases on the refuge and nine subjects entered pleas of guilty. One other case is still pending. Refuge personnel made three cases that were sent to a Federal Magistrate and all pleaded guilty. Eight letters were written to people involved in minor violations that were not prosecuted.

VI. OTHER ITEMS

A. Field Investigations

1. MLH-13: Effects of Mowing and Grazing and Vegetative Communities on Nesting Ecology of Ducks at Malheur National Wildlife Refuge, by Lois Edford.

This study continues the investigation conducted by John Clark in 1974 and 1975 on mixed meadows and uplands. It was also broadened to include the flat meadows without upland knobs. Comparisons are being made between the two plant communities related to duck nesting density and success.

a. Objective

(1) Determine the effects within and between two vegetative cover types of mowing and grazing on: use by breeding ducks, predation, production of ducklings, and species composition of breeding ducks.

(2) Determine the effects of several patterns of mowing and grazing on characteristics of vegetative communities related to nesting of ducks.

b. Progress Report

This is the first of three years research. A total of 134 duck nests were located. Results of 124 of them were recorded. The following points were concluded from this year's data:

(1) Overall success was 53 percent; 44 percent was destroyed and 3 percent was abandoned.

(2) By species, mallard nest success was 50 percent, gadwall 36 percent, cinnamon/blue-winged teal 35 percent, and divers (redhead, canvasback, ruddy duck) 92 percent.

(3) The highest nest success by vegetative types was in hayed meadow-uplands (63 percent), hayed meadows (52 percent) and hay-grazed meadow uplands (54 percent).

(4) Nest density for all species was highest on idle meadow upland, with about one nest per hectare.

(5) Overall, the various land uses on meadow-uplands had higher nest density than those on solid meadows.

(6) Highest production was on idle meadow-uplands (3.36 ducklings/hectare), hayed meadow-uplands (2.78) and hayed meadows (2.08).

(7) Heaviest used cover types were unmowed tallgrass, mowed tallgrass, brush and tallgrass, and bulrush.

(8) Early nesting birds tended to have higher success than later nesting birds, both within and between species.

2. MLH-14: An Ecological Study of the Common Raven (corvus corax) at Malheur National Wildlife Refuge and its Effects on the Nesting Success of Selected Waterfowl, by Richard Stiehl.

a. Objectives

(1) Determine the size of the raven population using the refuge and the annual diets and variation in feeding habits.

(2) Correlate the raven nesting ecology at the refuge with location of nests relative to areas of extensive waterfowl nesting, and feeding territories of nesting raven pairs.

(3) Ascertain the raven brood chronology.

(4) Determine the periods of seasonal use of Malheur Refuge by ravens and the arrival and departure dates for nonnesting birds.

(5) Determine the effects of selective raven removal on changes in size of feeding territory.

(6) Determine the effects of selective raven removal on the raven population.

(7) Correlate the effects of selective raven removal with nesting success of selected waterfowl.

(8) Suggest a possible raven management plan to alleviate unacceptable levels of predation by ravens on the eggs of selected waterfowl.

b. Progress Report

To learn about raven movements and dispersal, 81 ravens were banded and marked for individual identification with vinyl patagial wing markers. Most of the marked birds were young, captured in the nest prior to fledging. Difficulty was encountered in capturing adult birds. Young ravens were followed as they migrated out of the Blitzen Valley in late July, dispersing as far as 125 miles from their nests. Some young birds returned to the refuge in December. A large communal roost was established in mid-October and by early January 836 ravens were counted there.

A total of 63 possible raven nests were found in the refuge vicinity of 1,044 square miles (1 nest per 16.57 square miles). Nesting success was 60.1 percent based on 42 nests. Twenty one nests were intensively followed from egg laying to fledging. An average of 5.5 eggs were layed per nest. A total of 76.7 percent of the eggs in a nest hatched. Of the young that hatched 56.2 percent fledged, for a total fledging success of 33.6 percent (averaging 1.86 fledgling per nest).

Food habits were ascertained by collection of pellets and field observations. Spring food consists of carrion, rodents, and in some cases, bird eggs. Their summer diet

is mainly grasshoppers and other insects. Fall foods include grain and carp. Winter foods are primarily grain and carrion.

3. MLH-15: Carp Movement, Relative Abundance, and Experimental Control Studies in Malheur Lake and its Tributaries.

Since their accidental introduction into Malheur Lake, carp have had a detrimental influence in the marsh ecology. In 1975, an intensive analysis was made of the problem and all possible control methods. The analysis pointed out our lack of knowledge concerning basic carp ecology in Malheur Lake. In August, 1976, a fishery biologist was added to the staff to conduct this study. His responsibility is to determine local carp biology, experiment with carp control techniques and formulate recommendations for carp management.

a. Objectives

(1) Determine if a substantial movement exists by carp from shallow to deep portions of Malheur Lake during the winter months.

(2) Determine if carp spawn mainly in shallow periphery areas of Malheur Lake or over the entire lake area and tributaries.

(3) Determine carp relative abundance throughout Malheur Lake and its tributaries on a seasonal basis.

(4) Determine the age composition of Malheur Lake's carp population.

(5) Determine if any water quality parameters exist which influence carp abundance.

(6) Develop a carp management program for Malheur Lake Marsh and its tributary system.

b. Progress Report

During the autumn of 1976, thirty five gill net sets were made in Malheur Lake and its tributaries. Scale samples were collected for aging. Two radios were placed on carp to monitor their movements during winter months, but they were never located due to problems encountered with the radio equipment.

Carp were found to be fairly evenly distributed in the lake, with the largest concentration being found near the Silvies River confluence region. Carp abundance did not appear to be influenced by depth, turbidity, dissolved solids or pH. Additionally, when compared to healhy carp populations, those in Malheur Lake were found to be very slow growing. Most collected in gill nets were 3-4 years of age. Surprisingly, gill netting also revealed a high abundance of yellow perch and some white crappie. Individuals of both species exceeding a pound in weight were collected.

4. MLH-16: Comparison of Effects from Nonuse and Haying on Wet Meadows.

This study is being conducted by the Squaw Butte Experiment Station through a cooperative study agreement with the refuge. Study results will be useful to the refuge and Squaw Butte. For this reason, they agreed to conduct the study on the refuge at our request.

a. Objectives

(1) Determine changes in vegetative production of wet meadows as influenced by nonuse and haying practices.

(2) Determine changes in plant species composition of wet meadows as influenced by nonuse and haying.

(3) Measure changes in plant biomass quality (protein content and digestibility) as influenced by nonuse and haying.

(4) Determine compartment transfer rates of biomass as affected by nonuse and haying.

(5) Evaluate plant biomass production as related to flooding depth and water use efficiency.

b. Progress Report

Only preliminary work has begun. Transect lines were placed in the Horse Pasture Field near the Sodhouse Ranch. No field data has been collected at this time.

B. Cooperative Programs

A 36 enrollee YCC camp was operated during the summer under contract to the Malheur Field Station. Our third annual camp was again considered successful, primarily because of experience, good planning and an excellent staff.

Spike camps were conducted at Hart Mountain Refuge and on Bureau of Land Management lands along the South Fork of the John Day River. These two organizations have provided outstanding support and the kids really enjoyed getting away from the mosquitoes for two weeks!

YCC'ers placing junipers along the banks of the John Day River to reduce erosion. This project was done in cooperation with Bureau of Land Management.

Major jobs worked on this year included: fencing Knox Springs, assisting with Oregon State University duck nesting study, painting the apartments and Quarters No. 14 at headquarters, building the headquarters trail system, posting the Lava Bed area and building a new corral at Diamond Point.

In 1977 we will have two camps; a residential camp (24 people) and a nonresidential camp (18 people) to be operated out of Burns. We are looking forward to a busy summer!

C. Items of Interest

Malheur Field Stations' enrollment remained fairly stable with 320 students signing up for summer courses. This compared to 232 in 1974 and 211 in 1975. Over 20, three-week courses were given on a variety of environmental subjects.

Irma Gail, Clerk-Typist, retired in April after 12 years of government service. Irma's friendly smile and quiet voice had greeted many refuge visitors through the years.

Mr. Noel Cagle, Maintenance Foreman, retired with over 30 years of government service, most of which was at the refuge. Noel served with the Civilian Conservation Corps in the late 1930's at Malheur. He returned in the 1940's and served at Buena Vista and the headquarters stations until his retirement on August 23. Noel received a Special Achievement Award, a Certificate of Service plaque, his 30 year tie tack and card for his years of dedicated service and outstanding performance. Noel and his dedicated service will truly be missed.

Refuge Biologist Larry Napier attended the 5th Annual Trumpeter Swan Society Conference at Jackson Hole, Wyoming.

Ruth Warneke, Clerk-Typist, received a Special Achievement Award in the amount of $150.00 for her outstanding efforts in handling the Administrative Officer duties, along with her own during the three month period that the Administrative Officer position was vacant.

Training during the year included:

M. Jess	- Introduction to Supervision, CSC
N. Warneke	- Introduction to Supervision, CSC
	Defensive Driver Training
R. Warneke	- Defensive Driver Training
L. Napier	- Workshop in Environmental Assessment, CSC
	Technical Writing, CSC
	Defensive Driver Training
F. Griffiths	- Defensive Driver Training
A. Radtke	- Understanding Human Behavior Through T.A., CSC
	YCC Workshop, Eugene, Oregon
R. Gritman	- Understanding Human Behavior Through T.A., CSC

D. Safety

The refuge safety plan has been updated and revised. Quarterly safety meetings were held with participation by all personnel. Hazards were uncovered through inspections and corrected as time and funds permitted. One minor injury, requiring medical attention, happened to one of the personnel. No known injuries occurred to the visiting public.

The YCC camp had a much better safety record this year. In 1975, YCC'ers sustained eight injuries (six off-duty and two work related). This year, with a larger camp, YCC'ers only had three injuries (1 off-duty and two work related).

E. Credits

Joseph P. Mazzoni	Section I. A-D, Section III. B,F, Section VI. B-C, and editing of entire report.
Alfred L. Radtke	Section II. A-C, Section III. A, Section V. A-C, Section VI. B-C, and editing of entire report.
Larry D. Napier	Section III. C,E, Section IV. A-C, Section VI. A-D
Richard R. Sjostrom	Graphs
Sue Oyler	Title Page, Table of Contents, Personnel Roster, Section VI. C, E, and typing.
Ruth Warneke	Typing

All refuge personnel have contributed throughout the year to the accumulation of information upon which this report is based.

R1-57

UNITED STATES GOVERNMENT FISH AND WILDLIFE SERVICE

Memorandum

TO : ARD, Refuges & Wildlife Resources, Region 1, Portland DATE: June 9, 1977

FROM : Refuge Manager, Malheur National Wildlife Refuge, P.O. Box 113, Burns, OR 97720

SUBJECT: Narrative Report, CY 1976

Attached is a correction for page 4 of our CY 76

Narrative Report. Please insert over #2. Funding.

Joseph P. Manzoni

Attachment

cc: AM, Boise w/attachment

2 cc

:so

cc to C.O.
7/5

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!